Jan. 16, 1934. J. A. KENNEDY 1,943,977

INSULATED CONDUCTOR

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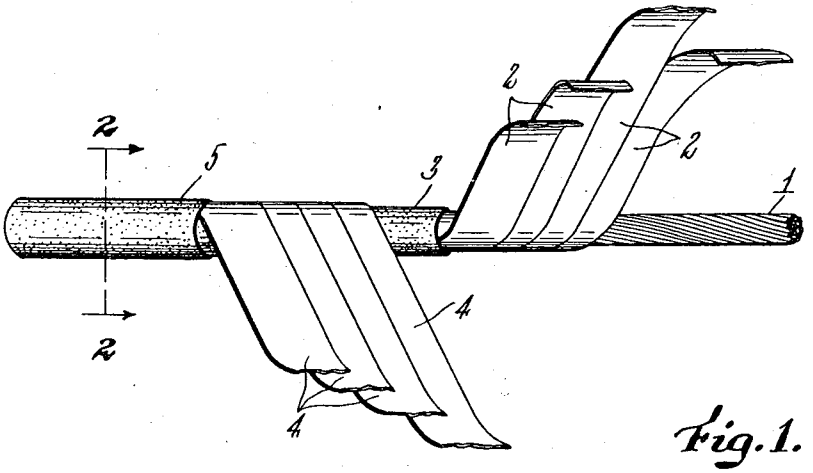


Fig. 1.

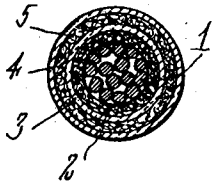


Fig. 2.

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INSULATED CONDUCTOR

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2 Claims. (Cl. 173—264)

This invention relates to an improved insulated and waterproof electrical conductor and the method of making the same. The primary object of the invention is to provide a method of making such a conductor which will employ cheaper materials and require less labor than has been necessary heretofore and which will result in producing a better article at less cost.

Another object of the invention is to provide an improved insulated conductor wherein rubber and the like are entirely eliminated as an insulator and which insulation can be easily and freely stripped from the conductor.

In accordance with the invention I provide an insulation covering on the conductor by spirally winding a strip or strips of suitable material, such as paper, previously treated to improve its insulation and water repellent protective qualities, thereon, the wrapping being non-adhesive on the conductor whereby it can be easily stripped therefrom. I also preferably provide more than one wrapping and treat the inner wrapping or wrappings with a cementitious and protective binder to provide a protective coating between the adjacent wrappings and cause such wrappings securely to adhere to each other. I furthermore preferably apply a lacquer or other suitable finish coating to the outer wrapping whereby the finished insulated conductor is rendered waterproof and/or oil-proof. The production of an improved insulated conductor embodying the above features comprises a further object of my invention.

With the above and other objects in view, as will become more apparent as this description proceeds, my invention consists in the features of construction and operation set forth in the following specification and illustrated in the accompanying drawing. In such drawing I have illustrated certain specific embodiments of my invention, but it will be understood that the invention can be otherwise embodied and that the drawing is not to be construed as defining or limiting the scope of the invention, the claims appended hereto being relied upon for that purpose.

Referring to the figures of the drawing,—

Fig. 1 illustrates a portion of my improved insulated conductor in process of manufacture;

Fig. 2 is a cross section thereof on line 2—2 of Fig. 1.

Referring more specifically to the drawing by reference characters, 1 indicates the copper conducting core on which a strip or strips 2 of paper, cloth or other suitable material are spirally wound, these strips preferably overlapping each other, as illustrated. Previous to their use for wrapping, these strips are prepared and treated in a manner improving the insulating and protective qualities of the material. In using paper for this material I have followed the following treatment. The paper is impregnated with a baking varnish gum solution or its equivalent. I have used a linseed oil baking varnish comprising a synthetic resin, vegetable oil, linseed and China wood oil. The paper is thereafter dried and the treating solution oxidized by heat before using it for wrapping the conductor. As thus treated and wrapped onto the conductor, the paper provides an insulation thereby which can be easily stripped from the conductor and which will thereupon leave the conductor bright and clean. While the conductor as thus covered may now be finished by finish treating this wrapping to provide an outside waterproof and/or oil-proof coating, I preferably apply one or more additional wrappings, as hereinafter described.

Before applying the second wrapping I treat the surface of the first wrapping with a cementitious and protective composition which is adapted to provide a protective coating 3 between the two adjacent wrappings and securely bind them together. This composition may be of any known gum, stearin pitch, asphalt or lacquer which has filling, adhesive and proofing qualities. After applying the first wrapping the wrapped conductor is run through a bath of this composition and the second wrapping 4 applied thereto, while the binder 3 is yet wet. The two wrappings thereupon become as a unit with a protective layer 3 therebetween. As illustrated in the drawing, I preferably wind the second wrapping strips 4 in the direction opposite to that of the wrapping strips 2, the two wrappings thereupon acting more efficiently to reinforce each other in providing a substantial insulation.

After providing the final wrapping, whether one or more wrappings are used, I finish the exterior surface thereof with one or more coatings of lacquer or other suitable finish which will provide an oil-proof and waterproof covering 5. A braided, woven or knitted jacket of known character may be also provided outside of the paper wrappings, if desired, and coated externally with a lacquer covering, like the coating.

The lacquer which I use is a solution of cellulose compound, preferably an inexpensive nitrocellulose. This lacquer forms an oil-proof and waterproof coating but is not fireproof. If it is desired to make the conductor flame-proof as well, I may use high tension flame-proof lacquer instead of that described; or I may apply coatings

of other flame-proofing material, as stearin pitch, sodium silicate, etc. When the latter agents are used, they are applied on the outside of the article before the lacquer covering is applied; i. e., next beneath the lacquer. It is within my contemplation, however, to omit the oil-proofing treatment, while providing waterproofing or flame-proofing only, or both waterproofing and flame-proofing.

The insulated conductor provided by my invention is sufficiently rigid to stay in place, and sufficiently flexible to be bent and used as required. The contact of the wrapping 2 with the core 1 is sufficient to remain in the position wrapped but without such adhesion to the wire as would prevent free stripping of the insulation from the core when desired. It will therefore be clear that any portion of the insulation can be easily stripped from the conductor when desired and such stripping of the insulation leaves the wire clean and bright. Furthermore, the contact of the wrapping with the wire is such that it is not necessary to tin the wire, as is now commonly done for the purpose of securing a freer stripping thereof. Experiment with and use of this improved insulation has proven conclusively that it is well adapted to withstand a relatively high voltage.

I claim:

1. An insulated conductor, comprising a central conducting core, a plurality of independent varnish impregnated wrappings of paper, the innermost of which directly engages the core, said wrappings being adhesively united, and an outer finish coating of lacquer on an outermost wrapping, the said wrapping being non-adherent on the core whereby the same can be easily stripped therefrom.

2. An insulated conductor, comprising a central conducting core an insulation wrapping engaging the core, the said wrapping being non-adherent on the core whereby the same can be easily stripped therefrom. A second wrapping of paper about the first wrapping, a binder between said two wrappings cementing them together, and a finish protective coating of lacquer about the outermost wrapping, said wrappings being formed of varnish impregnated strips.

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